PUBLIC HEALTH ADVISORIES AND GUIDANCE ON FISH CONSUMPTION FOR RECREATIONAL FISHING

2003 PCB FISH CONSUMPTION ADVISORIES

INTRODUCTION

Fish is good for you and your family and plays an important role in maintaining a healthy, well-balanced diet. It is an excellent source of protein, is low in fat and cholesterol, and is full of vitamins and minerals. The American Heart Association recommends people eat fish regularly. Fish is also one of the few foods that are rich in the omega-3 fatty acids needed for proper development of the brain and nervous system in the fetus and infants, and may reduce the risk of heart attack. Fish is an excellent substitute for other protein foods that are higher in saturated fats and cholesterol. So include fish in your diet. However, certain fish may contain toxic chemicals, such as polychlorinated biphenyls (PCBs) from the water they live in and the food they eat. PCBs build up in the fish—and in you—over time. It is a good idea to follow a few precautions in consuming fish, particularly if you eat fish often. The purpose of this brochure is to provide information to you on how to reduce your risk by avoiding or limiting consumption of certain fish, and to guide you to eat the fish you catch in ways that reduce your exposure to PCBs.

Since 1982, when research began to show elevated levels of potentially harmful contaminants in certain fish and crabs in some New Jersey waters, advisories were adopted to guide citizens on safe consumption practices. Fish consumption advisories are developed through a scientific process that includes collecting samples of fish from waters throughout the state and analyzing them for various chemical contaminants, such as dioxin, PCBs, chlordane and mercury. The contaminant levels in the fish are then evaluated using federal guidelines for protecting human health. Chemical contaminants such as dioxin, PCBs and chlordane are classified by the U.S. Environmental Protection Agency as probable cancer-causing substances in humans, while elevated levels of mercury can pose health risks to the human nervous system, particularly to developing fetuses. Recently, the NJDEP completed a new round of sampling and analysis that indicated state fish consumption advisories needed to be updated and expanded.

The New Jersey Department of Environmental Protection (NJDEP) and Department of Health and Senior Services (NJDHSS) provide advice on consuming those species of fish in which high levels of PCBs have been found. Since PCB levels may vary from one location to another, the advisory for fish consumption is also separated by site, so be sure to check which guidelines refer to your fishing location.

The NJDEP and NJDHSS can provide more information on the advisories and the health effects of chemical contaminants in the fish. To stay current with advisory updates and to request additional information, please contact the NJDEP Division of Science, Research and Technology at 1-609-984-6070 or check the website www.state.nj.us/dep/dsr/njmainfish.htm or the NJDHSS at 1-609-588-3123 or www.state.nj.us/health/eoh/foodweb.

General Advice

You can reduce your exposure to PCBs in fish by following as many of the recommendations below as possible. This general advice is not meant to take the place of advisories for specific areas, which follow later in this booklet, but should be followed in addition to them.

Consumption Guidelines

Fish Species: PCB levels may vary from species to species. If possible, eat smaller amounts of several different types of fish rather than a large amount of one type that may be high in contaminants. Try to focus your consumption on those species of fish that have lower levels of contaminants, such as fluke or flounder.

Fish Size: Smaller fish of a species will usually have lower chemical levels than larger fish in the same location because contaminants tend to build up in the fish over time. It is advisable to eat smaller fish (of legal size) more often than larger fish.

Cooking Techniques: PCBs tend to concentrate in the fatty tissue of the fish you catch. Proper cleaning and cooking techniques, which remove some of the fat from the fish, can reduce PCB levels approximately 50 percent as compared to raw fillets. Follow the proper cooking and cleaning guidelines (see below) to further reduce your PCB exposure.

PCBs (Polychlorinated biphenyls)
What are PCBs and how did they get into fish?

- PCBs were first used in transformers and other electrical equipment and were later incorporated into other uses such as printing inks, paints, and pesticides.

- The manufacture of PCBs was stopped in 1979 as a result of evidence that PCBs build up in the environment and cause harmful effects.

- PCBs are an extremely stable compound, which means that they persist in the environment for a long time. They tend to stay mostly in soil and sediment, but are also found in the air and water.

- Once they enter the food chain they have a tendency to absorb into fat tissue.

- PCBs enter the bodies of fish from surrounding water, sediment, and from eating prey (forage) which is already contaminated.

- PCBs are able to build up in fish to levels that are hundreds of thousands of times higher than the levels in the surrounding water.

- When people consume foods such as fish that have already accumulated PCBs, the PCBs in those foods then accumulate in their bodies.

Health Effects of PCBs

Cancer (Carcinogenicity)

- PCBs have been shown to cause cancer in animals, and there is evidence that PCBs may cause cancer in exposed humans.

Non-Carcinogenic Health Effects

- PCBs have also been shown to cause a number of serious non-cancer health effects in humans and animals, including effects on the nervous system of the developing fetus, the immune system, and the reproductive system

Are PCBs Levels Decreasing?

Recent data indicates that PCB levels have declined in some fish species and regions examined since the 1980s. For example, average PCB levels in striped bass and bluefish have declined markedly in northern NJ coastal waters when compared to levels measured in the 1980s: levels in bluefish have declined almost 40%, and striped bass levels have declined more than 70%. Levels in fish tissue have decreased as a result of the ban on PCB manufacturing as well as state, federal, and industry cleanups of contaminated sites and other sources. Levels of other contaminants (e.g., chlordane) have also declined.

If PCB Levels are Declining, are We Still at Risk?

Yes, while PCB concentrations have declined, the advisories on eating these fish have become more stringent. This is because the new advisories are more directly based on the health risks posed by PCBs than the previous advisories. The previous advisories were based on an approach developed by the federal Food and Drug Administration (FDA) that was not exclusively health-based, while the new advisories are based only on human health risks. While the levels have decreased in the last ten years, they are still at levels that pose a significant health risk. For more information on PCBs see the EPA web page: http://www.epa.gov/pcb/

Preparation and Cooking Methods for Fish and Crabs under Advisory

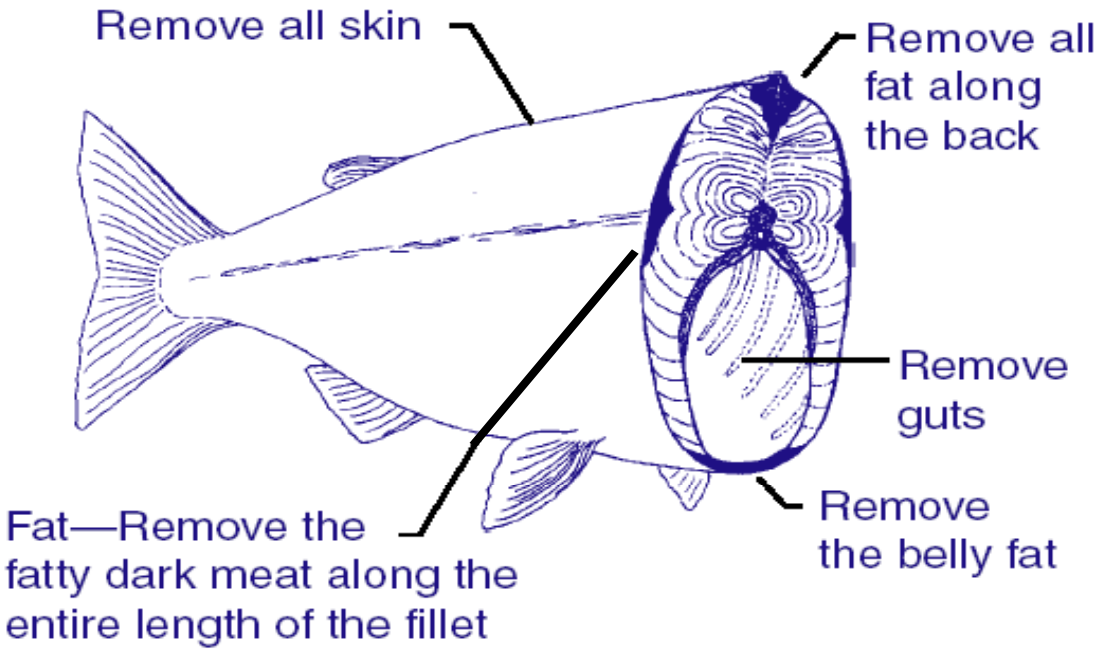
Fish Preparation Methods

Proper fish cleaning and cooking techniques may reduce PCB levels approximately 50 percent when compared to raw fish fillets.

Eat only the fillet portions. Do not eat whole fish or steak portions.

Do not eat the heads, guts or liver, because PCBs usually concentrate in those body parts. Also, avoid consumption of any reproductive parts such as eggs or roe.

Many chemical contaminants, like PCBs and pesticides (but not mercury), are stored in the fatty portions of fish. To reduce the levels of these chemicals, skin the fish and trim any of the dark meat (Lateral Line), back strap and belly flap. The following diagram illustrates those body portions.



Fish Cooking Methods

Use a cooking method such as baking, broiling, frying, grilling, or steaming that allows the fats and juices to drain away from the fish. When possible, cook the fish on an elevated rack that allows fats and juices to drain to the pan below.

Avoid batter, breading or coatings that can hold in the juices that may contain contaminants. The juices should be thrown away since they contain the PCBs and other chemicals that were in the fat. Do not pour these juices over the fish as a sauce or to moisten the fish. Butter, margarine or other liquids can be added to the fish for this purpose once the juices have been poured off.

After cooking, **discard all liquids and frying oils**. Do not reuse.

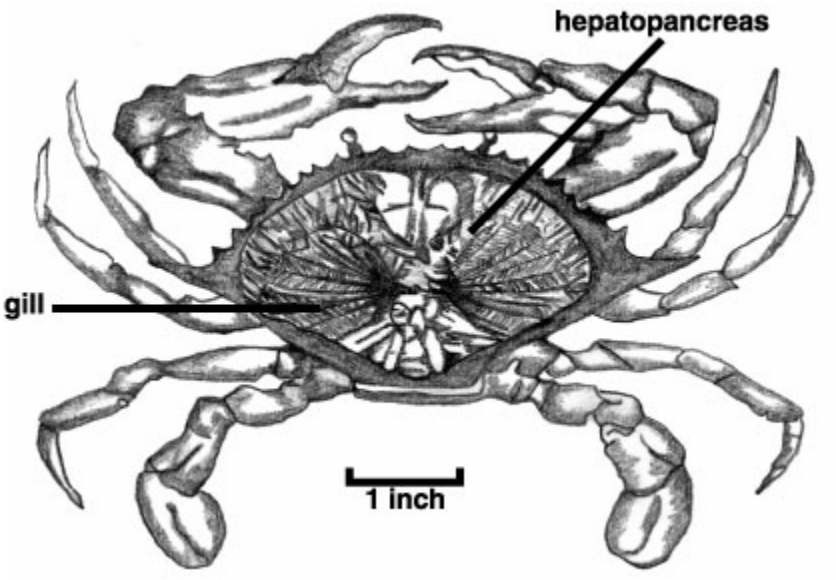
Do not use heads, skin, trimmed fatty portions in soups, stews, chowders, boils, broth or for fish stock. If you make stews or chowders, only use skinless fillet parts.

Raw fish may be infested by parasites. Cook fish thoroughly to destroy the parasites. This also helps to reduce the level of many chemical contaminants.

Crab Preparation Methods

Eating, selling or taking (harvesting) blue crabs from Newark Bay Complex is prohibited. If blue crabs are taken from water bodies other than the Newark Bay Complex, the following preparation techniques can be followed to reduce exposure to some contaminants.

The highest levels of chemical contaminants are found in the hepatopancreas, commonly known as the tomalley or green gland. It is the yellowish green gland under the gills. This material is found next to the lump meat (backfin) portion of the crab. Care must be taken to remove all of this material before cooking.



There is no specific cooking method available to reduce the chemical contaminant levels in blue crabs. The following steps for proper preparation is key to reducing your exposure to harmful chemical contaminants.

- Do not eat the green gland (hepatopancreas).
- Remove green gland (hepatopancreas) before cooking.
- After cooking, discard the cooking water.
- Do not use cooking water or green gland (hepatopancreas) in any juices, sauces, bisques or soups.

Advice for Pregnant Women, Women of Childbearing Age and Children – the High Risk Category

High-risk Individuals

- Infants, children, pregnant women, nursing mothers and women of childbearing age are considered to be at higher risk from contaminants in fish than members of the general public.

- People within this category should be particularly careful about following the advisories, because of the potential for PCBs to affect the development of the fetus, infant, and young child.

PCB Health Effects

- Studies have shown that the fetus and young children are most at risk to PCB exposure.
- Results of exposure may include developmental abnormalities.

Reducing Fetal exposure to PCBs

Because PCBs take a long time to leave the body after they accumulate, women who plan on becoming pregnant should begin following the more restrictive consumption advice before becoming pregnant - in order to minimize the exposure of the fetus during the anticipated pregnancy.

Site-Specific Consumption Recommendations

- Proper cleaning and cooking techniques can reduce PCB levels approximately 50 percent. You can reduce your cancer risk, or slightly increase the number of meals of fish you eat by following these procedures. Assuming a 50 percent reduction in contaminant levels it is possible to eat twice the recommended frequency of fish and remain at the same level of risk (for the general population). **This does not apply to people in the high risk category.**

- Nursing and pregnant women and children *may be more sensitive* to the harmful effects of PCBs. Because contaminants take a long time to leave the body after they accumulate, women who plan on becoming pregnant should begin following the more restrictive consumption advice before becoming pregnant so as to minimize exposure to the fetus during the anticipated pregnancy.

- The limits that follow each species assume that no other contaminated fish are being consumed. If you consume more than one species of fish listed in the advisory, the total consumption of fish should not exceed the recommended amount. [One simple approach is to use the lowest recommended frequency as a guideline for consumption.]

If your specific fishing site is not mentioned within the advisory, this does not mean the fish are free of contamination. Not all New Jersey waters have been tested, and not all fish species were found in all water bodies, or in some cases available data were insufficient to list a species for a specific water body. Follow the **statewide advisory** for the listed species if your fishing area is not mentioned in the guidelines.

2003 Fish Consumption Advisories for PCBs and Dioxin

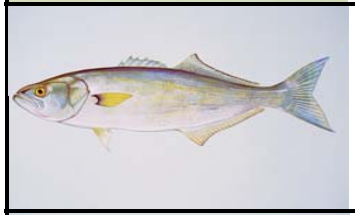
The table in the document below lists the recommended fish consumption frequencies for the **General Population** and **High Risk Individuals** for waters statewide and for specific water bodies. Generally, the advisories have been revised based on PCBs, while in some cases the advisories have not changed, for example, advisories based on dioxin. Meal frequencies that are underlined and in Italics (e.g., One meal per month) indicate advisories that are new or revised.

General Population: Advisories for the General Population are presented as a **range** of meal frequencies (for example: one meal per month **or** four meals per year). This range is based on an estimated 1 in 10,000 to 1 in 100,000 risk of cancer during your lifetime from regularly eating fish at the advisory level. By using this advisory, you have the necessary information to make an informed choice on the number of meals of fish to consume. In this manner, you can decide how much risk is acceptable when you consider consuming the species listed in this advisory.

High Risk Individuals: Includes infants, children, pregnant women, nursing mothers and women of childbearing age.

The NJDEP and NJDHSS can provide more information on the advisories and the health effects of chemical contaminants in the fish. To stay current with advisory updates and to request additional information, please contact the NJDEP Division of Science, Research and Technology at 609-984-6070 or check the website www.state.nj.us/dep/dsr/njmainfish.htm or the NJDHSS at 609-588-3123 or http://www.state.nj.us/health/eoh/foodweb.

FISH AND CRAB CONSUMPTION ADVISORIES BASED ON PCBs and DIOXIN CONTAMINATION

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3]
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	Recommended Meal Frequency
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
NEW JERSEY STATEWIDE - All Water Bodies (for areas without specific advisories)				
	American lobsters[4]	Do not eat green glands (hepatopancreas)		
	American eel	*Four meals per year*	*One meal per year*	Do not eat
	Bluefish (over 6 lbs/*24 inches)*	*Four meals per year*	*Do not eat*	Do not eat
	***Bluefish** (less than 6 lbs/24 inches)*	*Once a month*	*One meal per year*	*Do not eat*
	Striped bass*	*Once a month*	*One meal per year*	*Do not eat*

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3]
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	Recommended Meal Frequency
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
Newark Bay Complex (for other species see Statewide advisories)[4]				
This complex includes Newark Bay, Hackensack River downstream of Oradell Dam, Arthur Kill, Kill Van Kull, tidal portions of all rivers and streams that feed into these water bodies.	Blue crab*	Do not eat or harvest[5]		
	Striped bass*	Do not eat		Do not eat
	American eel*	*One meal per year*	*Do not eat*	Do not eat
	White perch			
	White catfish			
Passaic River downstream of Dundee Dam and streams that feed into this section of the river.	All fish and shellfish*	Do not eat		Do not eat
	Blue crab *	Do not eat or harvest[5]		
Hudson River (for other species see Statewide advisories)				
Hudson River includes the river downstream of NY-NJ border (about 4 miles above Alpine, NJ) and Upper New York Bay	Striped bass *	*Four meals per year*	*Do not eat*	Do not eat
	American eel *	*One meal per year*		
	White perch			
	White catfish	*Do not eat*		Do not eat
	Blue crab	*Six crabs per week*	*Three crabs per month*	*Three crabs per month*
		Do not eat green gland (hepatopancreas); *Discard cooking liquid*		

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3]
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	Recommended Meal Frequency
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
Raritan Bay Complex (for other species see Statewide advisories)				
This complex includes the New Jersey portion of Raritan Bay, the tidal portions of the Raritan River (downstream of the Rte. 1 bridge in New Brunswick) and the tidal portions of all rivers and streams that feed into these water bodies.	*American eel*	*One meal per year*	*Do not eat*	*Do not eat*
	White perch	*Four meals per year*	*Do not eat*	Do not eat
	White catfish			
	Blue crab	*Six crabs per week*	*Three crabs per month*	*Three crabs per month*
		Do not eat green gland (hepatopancreas); *Discard cooking liquid*		
Coastal Tributaries (for other species see Statewide advisories)				
This area includes the *Shark, Navesink Shrewsbury, Toms, and Mullica Rivers*	*American eel*	*Once a month*	*Once a year*	*Do not eat*
Lower Delaware River, Estuary & Bay (for other species see Statewide advisories)				
Delaware River from *Easton, PA/Phillipsburg*, NJ to PA/DE border, includes all tributaries up to the head of tide	American eel	*Four meals per year*	Do not eat	*Do not eat*
	Striped bass		*Do not eat*	
	Channel catfish	One meal every two months		

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3] Recommended Meal Frequency
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
Delaware River from DE/PA border south to C&D canal	All finfish	Do not eat		*Do not eat*
Delaware River from the C&D canal south to the mouth of Delaware Bay[6]	Bluefish	Do not eat fish larger than 6 lbs or 24 inches One meal per year for fish less than 6 lbs or less than 24 inches		*Do not eat*
	Striped Bass	Once a year		
	Channel catfish			
	White catfish			
	White perch			
Delaware Bay Tributaries	*American eel*	*One meal per month*	*Four meals per year*	*Four meals per year*
Other Water Bodies (for other species see Statewide advisories)				
Pennsauken Creek @ Forked Landing (Camden Co.)	Common Carp	*Four meals per year*	*Do not eat*	*Do not eat*
	Largemouth Bass	*One meal per month*	*Four meals per year*	*Do not eat*
	Pumpkinseed Sunfish			*Four meals per year*
	White Catfish		*One meal per year*	*One meal per year*
Evans Pond (Camden Co.)	Brown Bullhead	*One meal per week*	*One meal per month*	*One meal per month*
Cooper River, spillway below Evans Pond (Camden Co.)	Common Carp	*One meal per month*	*One meal per year*	*Do not eat*
	Bluegill Sunfish	*One meal per week*	*One meal per month*	*One meal per month*
Cooper River, @ Hopkins Pond (Camden Co.)	Brown Bullhead	*One meal per month*	*Four meals per year*	*Four meals per year*
Cooper River Lake	Largemouth Bass	*Four meals per year*	*Do not eat*	*Do not eat*

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3]
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	Recommended Meal Frequency
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
	Common Carp			
	Brown Bullhead	***One meal per week***	***One meal per month***	***One meal per month***
	Bluegill Sunfish			
Newton Lake (Camden Co.)	Bluegill Sunfish	***One meal per week***	***One meal per month***	***One meal per month***
	Brown Bullhead			
	Largemouth Bass	***One meal per month***	***Four meals per year***	***Four meals per year***
	Common Carp		*One meal per year*	***Do not eat***
Strawbridge Lake (Burlington Co.)	Largemouth Bass	***One meal per month***	***One meal per year***	***One meal per year***
	Bluegill Sunfish			
	Common Carp	***Four meals per year***	***Do not eat***	***Do not eat***
	Brown Bullhead	***One meal per week***	***Four meals per year***	***Four meals per year***
Stewart Lake (Woodbury) (Gloucester Co.)	Bluegill Sunfish	***One meal per week***	***One meal per month***	***One meal per month***
	Brown Bullhead			
	Largemouth Bass		***Four meals per year***	***Four meals per year***
	Common Carp	***One meal per month***	***One meal per year***	***Do not eat***
Passaic River (Dundee Lake to Elmwood Park) (Passaic-Bergen Co.)**	Redbreast Sunfish	***One meal per week***	***Four meals per year***	***Four meals per year***
	Brown Bullhead			
	Largemouth Bass	***One meal per month***	***One meal per year***	***One meal per year***
	Common Carp	***Four meals per year***	***Do not eat***	***Do not eat***
Passaic River @ Pompton River (Passaic Co.)**	Redbreast Sunfish	***One meal per week***	***Four meals per year***	***Four meals per year***
	Largemouth Bass			Do not eat
	Common Carp	***Four meals per year***	***Do not eat***	***Do not eat***

LOCATION	SPECIES	ADVISORY/PROHIBITION		
		General Population [1,2] Range of Recommended Meal Frequency		High-Risk Individual [2,3]
		Lifetime Cancer Risk of 1 in 10,000	Lifetime Cancer Risk of 1 in 100,000	Recommended Meal Frequency
		DO NOT EAT MORE THAN	DO NOT EAT MORE THAN	DO NOT EAT MORE THAN
Bound Brook (entire length including New Market Pond and Spring Lake; Somerset Co.)	All fish species	Do not eat		

NOTE: Meal frequencies that are underlined and in italics (e.g., *One meal per month*) indicate advisories that are new or revised.

*** Selling any of these species from designated water bodies is prohibited in New Jersey (N.J.A.C. 7:25-18A.4).**

[1] Range of Recommended Meal Frequency corresponds to a cancer risk of 1 in 10,000 to 1 in 100,000 over a lifetime.

[2] Eat only the fillet portions of the fish. Use proper trimming techniques to remove fat, and cooking methods that allow juices to drain from the fish (e.g., baking, broiling, frying, grilling, and steaming). See text for full description. One meal is defined as an eight-ounce serving.

[3] High-risk individuals include infants, children, pregnant women, nursing mothers and women of childbearing age.

[4] Advisories based on dioxin remain in effect for American lobster; and the Newark Bay Complex, except for white perch, white catfish, and American eel, which are based on PCBs.

[5] No harvest means no taking or attempting to take any blue crabs from these waters.

**** Supersedes the mercury advisory for listed species in these waters.**

[6] Delaware River/Bay advisories updated March 2004.

Photo Credits: Public domain images from U.S. Fish and Wildlife Service (www.images.fws.gov/); American lobster: NOAA (www.photolib.noaa.gov/habrest; Rick Wahle).